

Session Two:

AGRICULTURAL LIFEWAYS AND TECHNOLOGIES

African traditions helped develop agricultural methods that enriched the Americas. These traditions or lifeways shaped the tenor of rural life during periods of slavery, sharecropping, and black-owned farms. Africans implanted their technological “know-how” and cultural traditions on the rural landscape and agricultural industry.

Rice, Slaves, and Landscapes of Cultural Memory

Judith Carney

The Memory of Iron: African Technologies in the Americas

Candice L. Goucher

Bounded Yards and Fluid Borders: Landscapes of Slavery at Poplar Forest

Barbara J. Heath



**Places of Cultural Memory:
African Reflections on the American Landscape**

Rice, Slaves, and Landscapes of Cultural Memory

Judith Carney

Session Two:

Agricultural
Lifeways and
Technologies

By 1860 rice cultivation in the U.S. South extended over 100,000 acres along the coastal plain from North Carolina's Cape Fear River to the St. Johns River in Florida.(1) Large landholdings and a sizeable labor force characterized the ante-bellum rice economy, with plantations concentrated in the hands of some 550 planters and worked by 125,000 slaves.(2) On the eve of the Civil War, Georgia, representing less than one-third of the total land in rice (30,000 acres), accounted for 28% (52.5 million pounds) of the region's total output: 187.2 million pounds.(3)

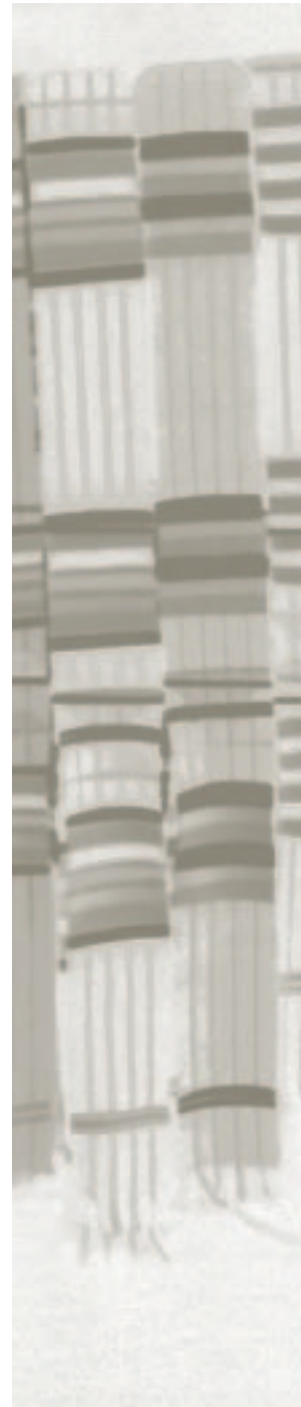
The rice plantation economy of South Carolina and Georgia has received considerable historical and geographical attention for its role in the regional economic development of the antebellum South. A nostalgic view of the rice economy persisted long past the cessation of planting in the 1920s due to numerous commentaries that documented the lifeways of planters, their achievements as well as their ingenuity in shaping a profitable landscape from malarial swamps.(4) In these accounts, slaves are presented as having contributed little but unskilled labor to the creation of the rice economy. In 1974 this planter-based view changed dramatically with the research of historian, Peter Wood, who carefully examined the role of slaves in the Carolina plantation system during the colonial period. His scholarship recast the prevalent view of slaves as mere field hands, to one which showed that they contributed agronomic expertise as well as skilled labor to the emergent plantation economy.

Wood's argument rested upon several threads of archival evidence, namely: the presence of

slaves in South Carolina from the onset of settlement in 1670, early colonial references suggesting that bondsmen produced their own subsistence crops, the lack of prior knowledge of rice farming by the English and French Huguenot planters, but its familiarity to many of the colony's African-born slaves.(5) Further support for Wood's pathbreaking research occurred in 1981 when another historian, Daniel Littlefield, drew attention to the antiquity of African rice farming practices as well as the demographic basis for South Carolina's slaves during the early colonial period. Littlefield showed that 40% of the slaves entering the state during the initial decades of rice experimentation and development originated in the area of West Africa where the crop's cultivation predates the arrival of Europeans.(6)

While this scholarship has resulted in a revised view of the rice plantation economy as one of both European and African influences, the role of African slaves in its evolution is still debated. Current scholarship questions whether planters recruited slaves from West Africa's rice coast to help them develop a crop whose potential they independently discovered, or whether African-born slaves initiated rice planting in South Carolina by teaching planters to grow a preferred food crop. Further understanding is hampered by the absence of archival materials that document a tutorial role for African slaves. But the silence of the historical record on a critical role for slaves in teaching planters rice cultivation is, perhaps, unsurprising given the paucity of materials available in general for the early colonial period as well as the fact that accounts of slaves' lives were placed in the hands of white society who justified slavery by denying the intellectual capacity of its victims.

This paper adds a geographical perspective to the historical research initiated by Wood, in order to examine the likely contributions of African-born slaves to the colonial rice economy. Attention



Places of Cultural Memory: African Reflections on the American Landscape

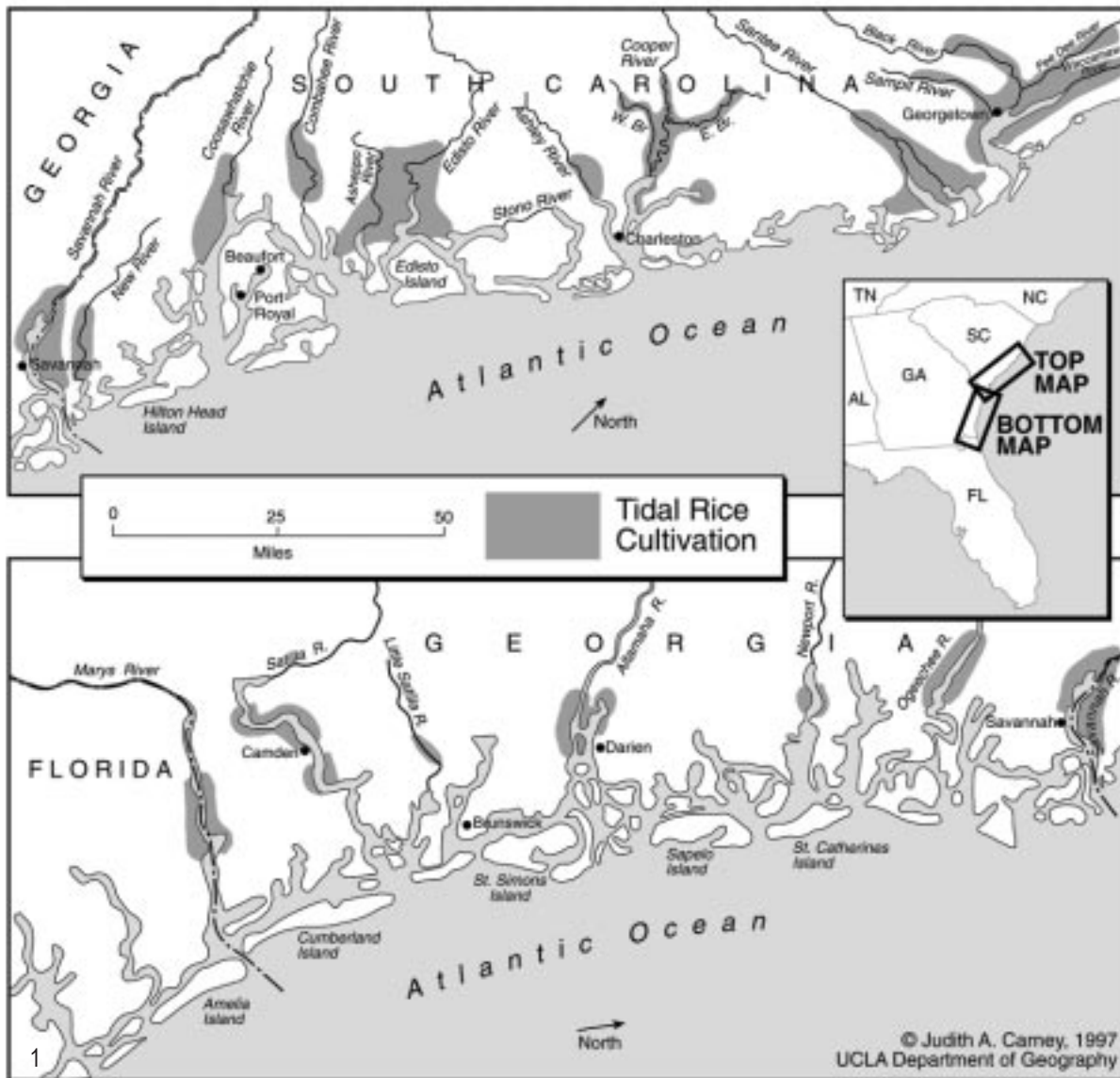


Figure 1. Map of Coastal South Carolina tidal rice cultivation.

focuses on the principal environments planted to rice on both sides of the Atlantic, and the techniques developed for soil and water management. Emphasis is placed on the initial century of rice development in South Carolina, 1670-1770, from the colony's initial settlement by planters and slaves to the crop's expansion into Georgia.

The paper begins by identifying the primary lowland environments where

rice was planted on each side of the Atlantic, which are presented in a classification system based on the principal water regime regulating cultivation. The discussion next shifts to the historical evidence for the presence of such systems in West Africa from the earliest contact with Europeans, and the existence of key principles of soil and water management that were to resurface later in Carolina rice systems. In the third

section, the discussion shifts to South Carolina and Georgia where the rice economy unfolded over time from rain-fed to inland swamp production, and culminated in the tidewater system.

Rice Cultivation Systems in the Atlantic Basin

When the Portuguese arrived along the West African coast in the mid-fifteenth century, they encountered rice cultivation over a broad area from Senegal to Liberia. (Figure 2) Rice (*Oryza glaberrima*) is an ancient West African cultivar that was domesticated independently of Asian rice (*Oryza sativa*) some two thousand years ago along the floodplain and inland delta of the Upper Niger River in Mali. (7) The Atlantic slave trade led to the introduction of some Asian *O. sativa* varieties to Africa's west coast, but their diffusion remained limited until Europeans promoted them during the twentieth century with colonialism. (8)

Rainfall in the West African rice zone averages between 800-2000 millimeters, encompassing a wider range than that found in the cultivated area of coastal South Carolina and Georgia (1100-1600 mm). (9) Within the West African rice region precipitation increases steadily

from north to south, with slightly higher averages along the coast. African cultivation is not, however, limited by rainfall constraints. Over the past two millennia farmers carefully adapted rice planting to other forms of water availability by growing the crop in moisture-holding soils, depressions fed by subterranean water sources, and floodplains inundated by tidal flow. Consequently, rice planting occurs in a variety of environments, which include mangrove estuaries, alluvial floodplains, low-lying depressions, grassland savannas, and upland forests.

Three major water regimes are used for rice cultivation: rainfall; artesian springs, perched water tables, or catchment run-off that keep inland swamps wet; and, river tides that flow over floodplains and coastal estuaries. (10) By the 1730s each of these systems and their sub-types had also emerged in South Carolina.

As the form of water availability for rice planting is a response to the cropping system's location along a landscape, West African cultivation can be visualized as occurring along a lowland to upland gradient of changing ecological conditions. Planting takes place simultaneously in distinct environments—a

practice that enables farmers to manipulate one or more moisture regimes for crop production. (11) (Figure 3)

The longstanding practice of growing rice in distinct environments from plateau, slope, and valley bottom to floodplain confers several advantages. By taking advantage of multiple water regimes, farmers extend rice growing beyond the limits of the precipitation cycle. In so doing, they reduce potential labor bottlenecks since cropping demands (field preparation, weeding, and harvesting) in each environment occur at different periods during the agricultural season. Reliance on several forms of water availability, moreover, enhances subsistence security by minimizing the risk of crop failure in any given year.

Of the three forms of rice cultivation, rainfed rice depends solely on rainfall for cropping. It is planted at the top of the landscape gradient, hence its frequent designation, upland rice. West African farmers commonly cultivate the crop on soils supporting mixed woodland vegetation that is partly cleared and burned of surface debris. Cattle form a critical part of the rainfed rice system, as the animals are seasonally herded into the field to graze the stubble after the harvest,

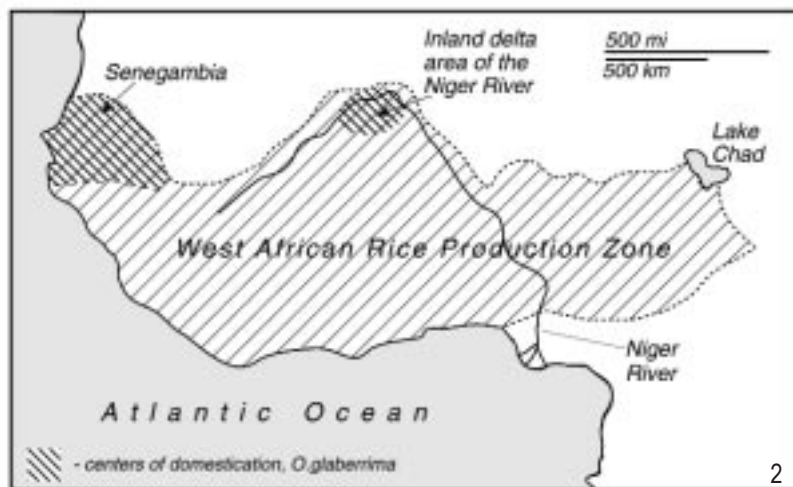


Figure 2. West African rice production zone. Adapted from P. Richards, "Upland and Swamp Rice Farming Systems in Sierra Leone: An Evolutionary Transition?" in *Comparative Farming Systems*, eds. B.L. Turner and S. Brush (New York, 1987), p. 157.

Places of Cultural Memory: African Reflections on the American Landscape

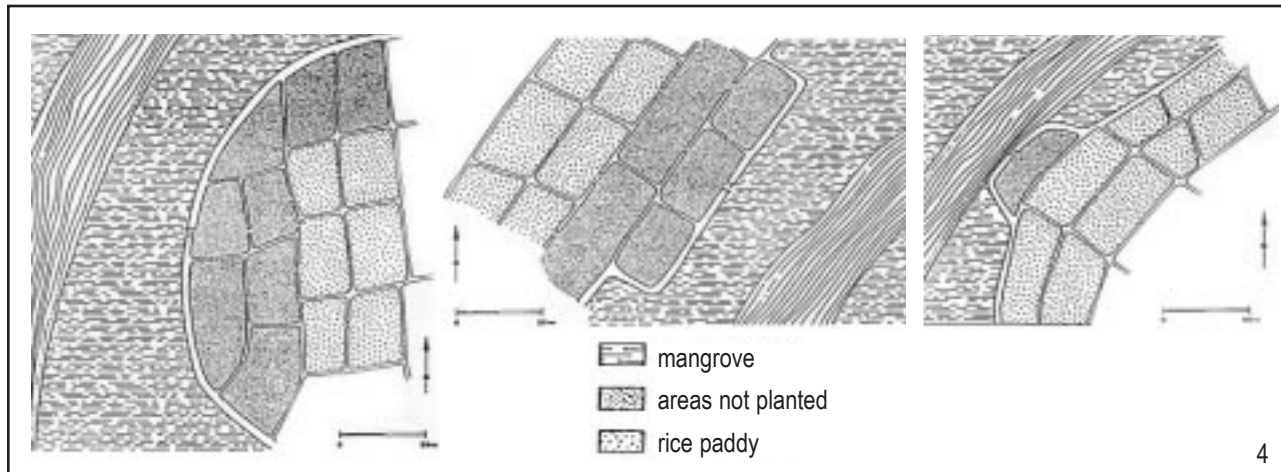
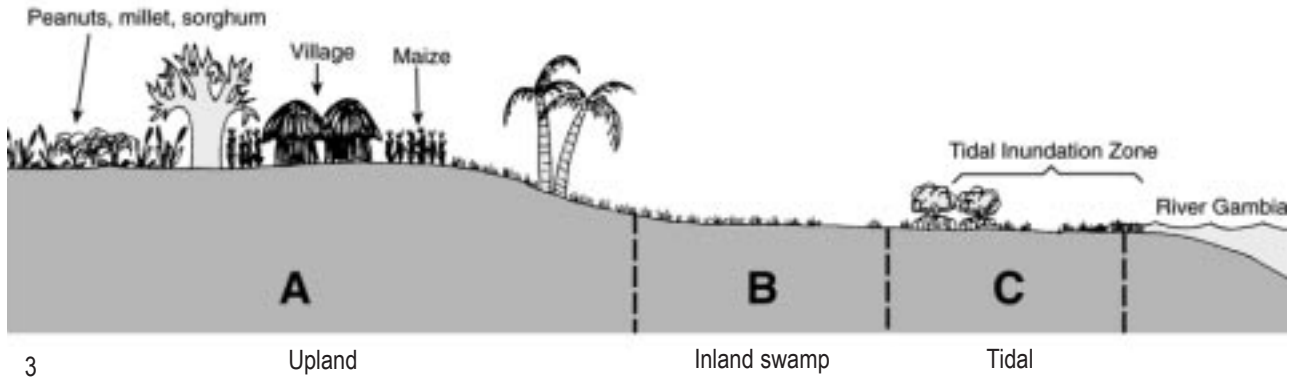


Figure 3. Rice cultivation along a landscape gradient in central Gambia.

Figure 4. Earthen embankment protects ricefields from tidal action.

Figure 5. Use of bamboo for Sluices in rice field, Guinea-Bissau. Photo: J. Carney.



their manure fertilizing the soil. When the cropping cycle ends, the field's land use shifts to cattle pasture.

Rice planted in inland swamps, the second system, enables the capture of groundwater from artesian springs, perched water tables, or catchment run-off. Plots are often enclosed with small earthen embankments to trap rainwater or stream run-off for soil saturation during drier cycles of the cropping season. Water level within the field can be lowered by piercing the plot bunds.

The remaining major African production system occurs in areas of tidal flow, on floodplains of rivers and estuaries. Dependent upon tides to flood and/or drain the fields, tidal cultivation involves a range of techniques from those requiring little or no environmental manipulation (planting on freshwater floodplains) to ones demanding considerable landscape modification (mangrove rice cultivation along coastal estuaries). The complex water and soil management principles embodied in tidal production are critical for examining the plausibility of African agency in the transfer of rice cultivation to the Americas.

Tidal rice cultivation occurs in three distinct floodplain environments: i) freshwater rivers, ii) seasonally saline rivers, and iii) coastal estuaries or the lower reaches of rivers affected by permanent marine water conditions. The first two involve similar methods of production—letting river tides flow over the floodplain rice fields—while the third system combines principles of each major rice system for planting under more challenging soil and water conditions. The floodplain is composed of two distinct micro-environments: the one adjoining the river and irrigated by daily tides, and another located at the inner margin, where the landscape gradient begins its rise and is reached only during high tides.(Figure 3) Rice cultivation, moreover, occurs in

floodplains influenced by seasonal or permanent river salinity. In the first, planting occurs after the rains push the saltwater interface downstream for at least the three months needed to complete a cycle of cultivation.

In tidal areas of permanent salinity (known as mangrove rice), the most sophisticated West African production techniques are in evidence. This system has received insufficient attention by historians of rice development, who have looked to West Africa for potential influences in South Carolina and Georgia.(12) Comparisons between rice systems on both sides of the Atlantic Basin have understandably focused on tidal freshwater rivers, like those planted to rice in South Carolina and Georgia. But by separating out one floodplain system for comparison from the totality of those planted, the full range and complexity of agronomic knowledge that informs West African rice cultivation is missed.

Unaware of the complex principles Africans have long deployed to plant different types of floodplains, historians of rice origins in the South have minimized the real contribution of slave knowledge to the development of the tidewater system because the similar production environment along West African freshwater rivers involves very little landscape transformation.(13) The emergence of the sophisticated tide-water system that led to Carolina and Georgia's economic prominence remains unchallenged as the product of European technological mastery and ingenuity. Yet, a careful consideration of the mangrove rice system along coast estuaries in West Africa illuminates the agency of Africans in developing principles later deployed in the tidewater system.

West African rice production in tidal estuaries occurs south of the Gambia

River in areas of permanently saline water conditions where rainfall generally averages 1500 mm annually. These are environments mantled by extensive stretches of mangroves, whose aerial roots trap alluvium carried by marine tides. The deposited organic matter makes these soils among the most fertile of the West African rice zone, but they require careful management to prevent oxidation and their transformation into a toxic acid-sulfate condition. By manipulating several water regimes and developing extensive drainage systems for its control, the mangrove rice system reveals the complex assemblage of knowledge that would transfer to the tidewater rice fields of the South.

Rice established in coastal estuaries depends upon enclosing the site chosen for cultivation with an earthen embankment, which acts as a barrier against the flow of marine tides.(Figure 4) Careful attention to landscape guides the location of the principal drainage canals, which are used to capture rainfall for irrigation. The perimeter is divided into individual rice fields by forming a series of lower embankments or berms perpendicular to the main one, again to assist in water control. Seedlings are established upon the furrows of individual plots.

The mangrove rice system combines the two principles of water control that later emerged in Southern tidewater production. Rainfall is captured by laying out a system of canals for irrigation as well as controlled flooding to drown unwanted weeds. Sluices built into the berms and main embankment enable control over water flow for field submersion as well as drainage. Fitted with valves made from hollow tree trunks and plugged with palm thatch, sluices in the individual plots drain into the principal one built into the embankment.(Figure 5)

Impounding rainwater, which is evacuated into the estuary at low tide, floods the field. Several years of rainfall are required before the field is initially desalinated, with the process at times hastened by directing the flow of seasonal freshwater springs into the perimeter to leach out salt residues.(14) Cultivation commences once desalination is completed although farmers depend annually on the rains to rinse accumulated dry season salt residues.

Each year soil fertility is renewed during the dry season by periodically opening the sluices at high tide to enable the entry of marine water. This action results in the deposition of organic matter, albeit of saline origin, but importantly, prevents the oxidation that leads to acid-sulfate soil formation. In the month or so prior to the onset of the rainy season, the sluices are once again closed to bar the entry of saltwater. A new cycle of production ensues by layering the ridges with accumulated deposits of swamp mud. Considerable effort is devoted annually to maintaining the system's earthworks, but yields exceeding two tons per hectare make the mangrove system among the most productive traditional African rice system ever developed.(15)

The complex soil and water management embodied in growing rice in multiple micro-environments, along a landscape continuum, formed the basis for a sophisticated knowledge system that was in place long before the Atlantic slave trade. The adroit manipulation of numerous landscapes that characterized West African rice cultivation reveals numerous affinities with the process of technology development in tidal rice, the antebellum era's quintessential production system.

Historical and Geographical Continuities Across the Atlantic

When Islamic scholars followed pre-existing overland trade routes to the Malian Empire in the fourteenth century, they arrived in the heart of West African rice domestication where food surpluses had sustained empire formation from the ninth century.(16) These earliest commentaries on the crop's cultivation note its abundant harvests and the sale of surpluses regionally.(17) More detailed descriptions of West African rice systems came later, with the arrival of Portuguese vessels along the Atlantic Coast from 1453. Portuguese vessels established the pattern of rice purchases that would later increase demand for African surpluses for provisioning slave ships across the Middle Passage.(18)

The proximity of the mangrove rice system to Portuguese navigation routes elicited considerable attention from an early date. When a prolonged cycle of drought disrupted mangrove rice cultivation in the Sine-Saloum estuary north of the Gambia River in the fifteenth century, land use shifted to collecting the accumulated salt deposits. Diogo Gomes, the first Portuguese captain to enter the estuaries of the Geba (Guinea-Bissau) and Gambia Rivers in 1456, observed that the regional trade in a red salt originated on such abandoned rice fields.(19) De Almada, in 1594, provided a more detailed description of the mangrove rice system that characterizes rice planting in coastal estuaries south of the Gambia River to this day. He noted the use of embankments and canals to impound rainwater for seedling submersion and desalination as well as ridging to improve soil aeration.(20) Thus, long before the permanent settlement of South Carolina, De Almada's description

reveals the existence of the principles of irrigated, or mangrove, rice cultivation from the earliest period of contact with Europeans. The eighteenth century slave captain, Samuel Gamble, so marveled at the complex system that he provided a diagram of field layout to accompany his description of water management techniques.(21)(Figure 6)

Discussion of the rainfed and inland swamp cultivation systems away from coastal and riverine access routes is documented, ca. 1640, in a manuscript published by an Amsterdam geographer, Olfert Dapper. Relying upon information supplied by Dutch traders operating in the region currently known as Sierra Leone and Liberia, Dapper reported rice cultivation along a lowland to upland landscape gradient in low-lying swamps as well as with rainfall.(22) Direct observation of these systems, however, only came later in the mid-eighteenth century when Europeans financed overland expeditions for exploration, trade, and science.(23)

The growing dispersal of Europeans into the West African interior during the nineteenth century brought more detailed commentaries on the burning of forests for rainfed rice, the field's subsequent rotation for cattle grazing, as well as the use of earthen reservoirs in inland swamps for water impoundment against drought.(24) This form of irrigation drew the interest of the French explorer, Caillié, who in 1830, noted:

"As the country is flat, they take care to form channels to drain off the water. When the inundation is very great, they take advantage of it and fill their little reservoirs, that they may provide against the drought and supply the rice with the moisture it requires."(25)



Figure 6. Baga rice cultivation. Courtesy: National Maritime Museum, Greenwich, England.

Rice Cultivation in South Carolina

Slaves accompanied the first settlers to South Carolina in 1670; within two years they formed one fourth of the colony's population, their numbers surpassing whites as early as 1708.(26) By 1690, one plantation manager discussed experiments with sowing the cereal in 22 different locations in South Carolina.(27) The first rice exports are recorded in 1695 with one and one-fourth barrels shipped to Jamaica.(28) The economy was being increasingly

oriented to rice, and in 1699 exports reached 330 tons; by the 1720s, rice had emerged the leading staple.(29)

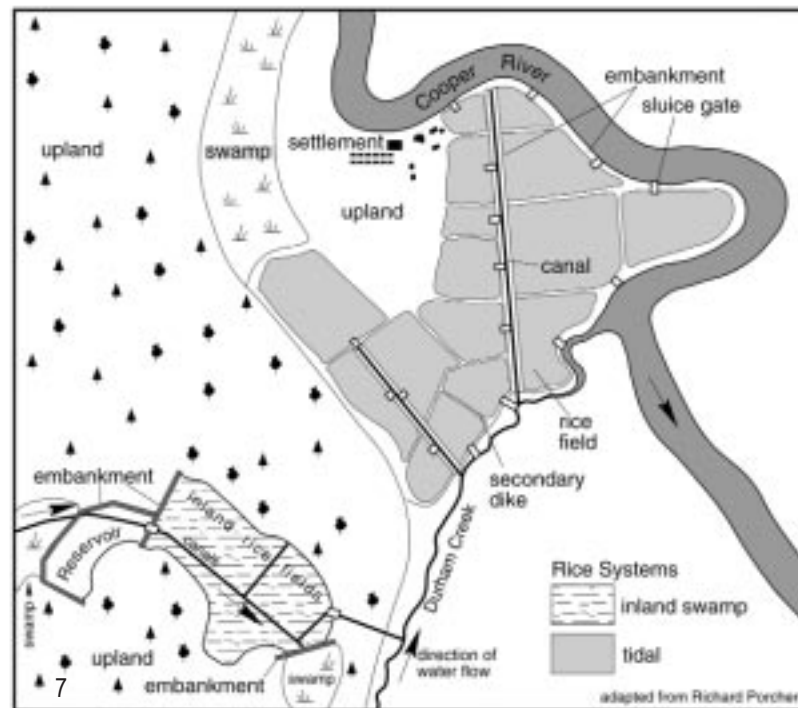
What is significant about this early period of rice development is the documented presence in South Carolina by the 1730s of the three principal West African systems: rainfed, inland swamp, and tidal. But unlike West Africa, where these systems of production frequently occur simultaneously, their unfolding in colonial South Carolina represented a distinct stage in the evolution of its plantation economy. The initial emphasis on the rainfed system shifted in the early eighteenth century to the inland swamps

and from the 1730s, increasingly to tidal (tidewater) cultivation.(30) The unfolding of rice cultivation in South Carolina and Georgia as an export crop for European and Caribbean markets embodied a different rationale than that in West Africa. Food security no longer required the planting of rice in distinct micro-environments. Instead, mercantile objectives rested on selecting a specific production environment for emphasis at different points in time.

The first production environment used for growing rice in South Carolina was the rainfed system which, as in West Africa, formed part of a land use system based on agriculture and cattle

Places of Cultural Memory: African Reflections on the American Landscape

Figure 7. Inland and Tidewater rice system, South Carolina. Location: Western branch of the Cooper River. Courtesy: Richard Porcher.



grazing. Slaves cleared the forests, extracting the marketable pitch, tar, and resins from pines, and then planted subsistence crops, like rice, as a rotation with cattle, whose manure maintained soil fertility.⁽³¹⁾ These activities resulted in the export of salted beef, deerskins, and naval stores which, in turn, generated the capital for additional slave imports. With the dramatic increase in the slave population from 3,000 (1703) to nearly 12,000 (1720) and 40,000 (1745) rice cultivation became the principal occupation of slave labor.⁽³²⁾

During these decades of escalating slave imports, the land use system based on forest products and rainfed rice in rotation with cattle grazing, had shifted to cultivation in inland swamps.⁽³³⁾ The focus on inland swamp cultivation represented the first attempt to control water for irrigation in South Carolina rice fields, but increased the demand for slave labor to construct

the berms, ridges, and sluices critical for water control. Like its counterpart in West Africa, inland swamp cultivation depended upon impounding water from rainfall, springs, high water tables, or catchment run-off. Small earthen embankments enabled water capture for irrigation or field flooding to depress the growth of opportunistic weeds, thereby reducing the onerous labor demand of weeding.

Field flooding for irrigation and weed control occurred in a variety of inland swamp environments. For instance, swamps located within reach of streams and springs had dikes placed at the high and low ends. The lower dike or embankment kept floodwaters on the field while the upper one enabled the passage of stream or creek water. Each dike was equipped with a sluice, the lower one used for draining the field as desired, the upper one allowing water to flow onto the field when needed.⁽³⁴⁾

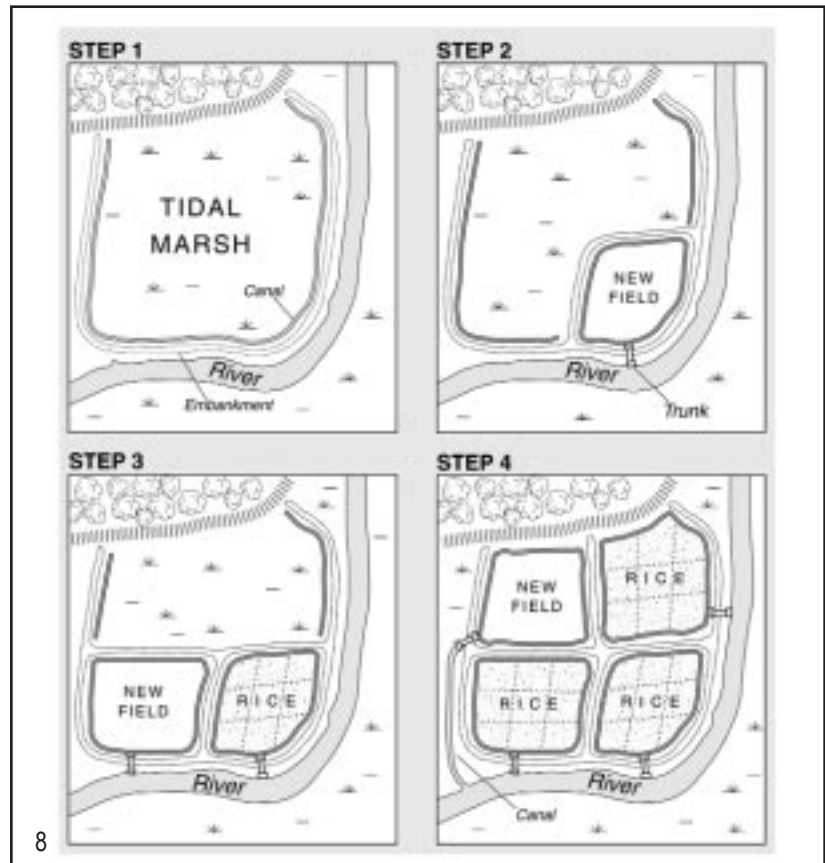
Rice planting could also occur in inland swamps formed on salt marshes.⁽³⁵⁾ Under special circumstances, such as the location of the saline swamp near the terminus of a freshwater stream, the plot could be desalinated and then planted to rice. In such cases, the embankment at the lower end of the swamp permanently blocked the entry of salt water, while a sluice in the upper embankment delivered stream water to the plot initially for desalination and then, for irrigation and weed control. This system functioned along the lower reaches of the Cooper River “nearly within sight of the ocean.”⁽³⁶⁾

The variation in these inland swamp systems embodied a range of principles that reappeared with the later shift to tidewater cultivation. Controlled flooding was perfected by constructing a separate reservoir and dam to receive freshwater flows from adjacent creeks and streams.^(Figure 7) Reservoir water

reached the rice field through a canal that operated by gravity flow.(37) This water delivery system consequently enabled water storage for irrigation and weed control and its delivery on demand to rice fields positioned outside tidal flow. But the inland swamp system could fail in years of high river levels or low rainfall. The shift to tidewater cultivation would eventually represent but a fine tuning of the underlying principles of this inland swamp system.(38)

By the 1720s, the key methods of water and soil management, found in the rice growing systems of West Africa, were evident in the inland swamp systems of South Carolina. The next decade represented an extension and adjustment of these principles to the specific topographic and hydrological conditions of tidal rivers. By the mid-eighteenth century, rice production was steadily shifting to tidal river floodplains in South Carolina and into Georgia, just prior to repeal of the anti-slavery law in 1750.(39) A notice of a land sale by William Swinton of Winyah Bay, South Carolina provides one of the earliest references to the growing emphasis on tidewater production: "...that each [field] contains as much River Swamp, as will make two Fields for 20 Negroes, which is overflow'd with fresh Water, every high Tide, and of Consequence not subject to the Droughts."(40) By 1752 rich Carolina planters were converting inland swamps and tidal marshes along Georgia's Savannah and Ogeechee Rivers to rice fields.(41) The shift to tidewater production accelerated after the American Revolution and remained the basis of the region's economic prominence until the demise of cultivation in the 1920s.(42)

The environment favored for tidewater cultivation was the floodplain adjacent to an estuary where the diurnal variation in sea level resulted in flooding



or draining a rice field.(43) Three factors determined where tidewater fields could be constructed: tidal amplitude, salt-water encroachment, and estuary size and shape. A location too near the ocean faced saltwater incursion, while one too far upstream removed a plantation from tidal influence. As in the West African mangrove rice system, a rising

Figure 8. Tidal swamp conversion, South Carolina.

Figure 9. Floodgates on a Carolina tidal plantation, c. 1920. Courtesy: The Charleston Museum.



tide flooded the fields while a falling tide was used for drainage. Tidal pitch varied between one to three feet—conditions usually found along riverine stretches ten to 35 miles upstream from the river's mouth.(44)

Estuary size and shape also proved important for the location of tidewater plantations for their effect on water mixing and thus salinity. For example, the downstream extension of tidal rice cultivation reflected differences in freshwater dynamics between rivers draining the uplands and those flowing inland from the sea. Since rivers of piedmont origin deliver freshwater within miles of the coast, tidal cultivation could occur within a short distance from the ocean.(see Figure 1) But other tidal rivers are arms of the sea and must

reach further inland for freshwater supplies. Along such rivers the freshwater stream flow forms a pronounced layer on top of the heavier saltwater, enabling the former to be tapped for tidal irrigation.(45) The sites suitable for tidal cultivation consequently required skilled manipulation of tidal flows and saline-freshwater interactions to attain high levels of productivity. West African tidal rice farmers had already perfected such practices.

Preparation of a tidal floodplain for rice cultivation followed principles remarkably similar to the West African mangrove rice system (compare Figures 4 and 8). Placed next to a river, the rice field was embanked at sufficient height to prevent tidal spillover. The earth removed in the process resulted in an

adjacent canal to irrigate and drain the swamp. Slaves subsequently cleared the dense vegetation for cultivation. The next step involved dividing the area into quarter sections (ten to 30 acres) that were fed by secondary ditches. Sluices built into the embankment and field sections operated as valves for water entry and evacuation much as they do in Africa's mangrove rice system.(Figure 8)

The shift to tidewater cultivation required considerable landscape modification and ever greater numbers of laborers. The near doubling of slave imports into South Carolina from 39,000 to 75,000 between 1750 and 1770 facilitated the transition from inland swamp cultivation.(46) The labor in transforming tidal swamps to rice fields was staggering as historical archaeologist, Leland



Figure 10. Women milling subsistence rice, Sapelo Island, Georgia, c. 1915. Courtesy: Georgia Department of Archives and History

Figure 11. Rice winnowing with fanner basket, South Carolina, c. 1935. Courtesy: the Charleston Museum.

Figure 12. Mandinka girl with rice winnowing basket, the Gambia. Photo: J. Carney.

Ferguson, vividly captures for South Carolina: "...these fields are surrounded by more than a mile of earthen dikes or 'banks' as they were called. Built by slaves, these banks...were taller than a person and up to 15 feet wide. By the turn of the eighteenth century, rice banks on the 12 1/2 mile stretch of the East Branch of Cooper River measured more than 55 miles long and contained more than 6.4 million cubic feet of earth...This means that...working in the water and muck with no more than shovels, hoes, and baskets...by 1850 Carolina slaves...on [tidal] plantations like Middleburg throughout the rice growing district had built a system of banks and canals...nearly three times the volume of Cheops, the world's largest pyramid."(47)

The tidewater plantation continued to make considerable demands on slave labor for maintaining the earthen infrastructure even if it reduced the labor demands for weeding. With full water control from an adjacent tidal river, the rice field could be flooded on demand for irrigation and weeding, and renewed annually by alluvial deposits. The historian, Lewis Gray, underscored the significance of tidal flow for irrigation, as well as weeding, in explaining the shift from rudimentary inland swamp systems to tidewater cultivation: "Only two flowings were employed as contrasted with the later period when systematic flowings came to be largely employed for destroying weeds, a process which is said to have doubled the average area cultivated per laborer...The later intro-

duction of water culture [tidal] consisted in the development of methods making possible a greater degree of reliance than formerly on systematic raising and lowering of the water."(48) A slave was consequently able to manage five acres instead of the two typically assigned with inland rice cultivation.(49)

The systematic lifting and lowering of water was achieved by the sluices, located in the field's embankment and secondary dikes.(Figure 9) Sluices eventually assumed the form of hanging floodgates, but retained the nomenclature, "trunk", by Carolina planters. The continued use of the term through the antebellum period suggests that the technological expertise of Africans indeed proved crucial for establishing rice cultivation in an earlier era. During

the antebellum period trunks had become large floodgates that were buried in the embankment at a level above the usual low tide mark. Doors (gates) were positioned at both ends, which by pulling up or loosening would be allowed to swing. The inner doors would open in response to river pressure as it flowed through the raised outer door, and then close with receding waters. Field draining reversed the arrangement with the inner door raised and the outer door allowed to swing while water pressure in the field forced the door open at low tide.(50)

Curiosity over the origin of the term, trunk, for sluices or floodgates led one planter descendant, David Doar, to inadvertently stumble upon likely technology transfer from West Africa:

For years the origin of this name bothered me. I asked every old planter I knew, but no one could enlighten me. One day a friend of mine who planted on one of the lowest places...said to me with a smiling face: "I have solved that little trunk question. In putting down another one, I unearthed the granddaddy of plug trunks made long before I was born." It was simply a hollow cypress log with a large hole from top to bottom. When it was to be stopped up a large plug was put in tightly and it acted on the same principle as a wooden spigot to a beer key.(51)

The earliest sluice system in South Carolina looked and functioned exactly like its African Counterpart.(see Figure 5)

African antecedents to Carolina rice culture are also evident in the use of the African mortar and pestle for husking and polishing the grain, which was accomplished by hand until it was mechanized on the eve of the American Revolution. The mortar and pestle used for milling rice continued among freed blacks for subsistence needs into the

twentieth century.(Figure 10) Dale Rosengarten's historical research on basket origins in the lowcountry, moreover, indicates the prototypical one employed for winnowing derives from the Senegambian area of West Africa, where oval coiled baskets are still used to accomplish the task.(52) Figures 11 and 12 illustrate these winnowing baskets respectively in South Carolina during the 1930s and in contemporary Gambia. From cultivation to processing, the historical reconstruction of rice culture in South Carolina and Georgia resonates with linkages to Africa.

Conclusion

While the view of Africans as contributing little more than labor to the rice plantation system of South Carolina and Georgia has given way to recognizing their pre-existing skills and expertise in cultivation, debate still rages over the role of slaves in technology transfer. The cross-cultural and spatial perspective presented in this paper suggests that African-born slaves indeed provided critical expertise and technological know-how in the evolution of the rice cultivation system of South Carolina and Georgia. Evidence from the first 50 years of settlement in South Carolina suggests that technological development and innovation in the rice economy was the product of both African and European knowledge systems. These knowledge systems and their respective technological and agronomic heritages combined in new ways to shape rice cultivation along the Atlantic seaboard. The African contribution to rice development in South Carolina and Georgia should be featured as part of interpretive materials to educate the general public who visit historical parks created from former rice plantations.

Notes

1. Albert Virgil House, *Planter Management and Capitalism in Antebellum Georgia* (New York: Columbia University Press, 1954); James Clifton, "Golden Grains of White: Rice Planting on the Lower Cape Fear," in *The North Carolina Historical Review* 50(1973): 365-393; Pat Morgan, "A Study of Tide Lands and Impoundments within a Three River Delta System—The South Edisto, Ashepoo, and Cumber Rivers of South Carolina," (masters thesis, University of South Carolina, 1974); Charles Gresham and Donal D. Hook, "Rice Fields of South Carolina: A Resource Inventory and Management Policy Evaluation," in *Coastal Zone Management Journal* 9(1982): 183-203; Julia Floyd Smith, *Slavery and Plantation Growth in Antebellum Florida 1821-1860* (Gainesville: University of Florida Press, 1973); idem, *Slavery and Rice Culture in Low Country Georgia 1750-1860* (Knoxville: University of Tennessee Press, 1985); Betty Wood, *Slavery in Colonial Georgia* (Athens: University of Georgia Press, 1984).

2. James Clifton, *Life and Labor on Argyle Island* (Savannah, GA: Beehive Press, 1978).

3. House, *Planter Management and Capitalism*, 23; Douglas C. Wilms, "The Development of Rice Culture in 18th Century Georgia," in *Southeastern Geographer* 12(1972): 45-57; United States Census Office, *Agriculture of the U. S. 1860. 8th Census* (Washington, D.C.: Government Printing Office, 1864).

4. Ulrich B. Phillips, *American Negro Slavery* (New York: D. Appleton and Co., 1918); A. S. Salley, "The Introduction of Rice Culture into South Carolina," in *Bulletin of the Historical Commission of South Carolina* 6 (Columbia, SC: State Company, 1919); Ralph Betts Flanders,

Plantation Slavery in Georgia (Chapel Hill: University of North Carolina Press, 1933); David Doar, *Rice and Rice Planting in the South Carolina Low Country* (Charleston, SC: Charleston Museum, 1970[1936]; Duncan Heyward, *Seed from Madagascar* (Chapel Hill: University of North Carolina Press, 1927); Norman Hawley, "The Old Plantation in and Around the Santee Experimental Forest," in *Agricultural History* 23(1949): 86-91.

5. Peter Wood, *Black Majority* (New York: Norton, 1974).

6. Wood, in *Slavery in Colonial Georgia*, 103, also indicates a similar trend for Georgia, noting that three-fourths of the slaves shipped there during the critical period of tidewater rice expansion (1766-1771) originated from West Africa's rice coast. Also see Daniel Littlefield, *Rice and Slaves* (Baton Rouge: Louisiana State University Press, 1981).

7. Roland Portères, "Primary Cradles of Agriculture in the African Continent," in *Papers in African Prehistory*, J. D. Fage and R. A. Oliver, eds. (Cambridge and New York: Cambridge University Press, 1970), 43-58; R. J. McIntosh and S. K. McIntosh, "The Inland Niger Delta before the Empire of Mali: Evidence from Jenne-jeno," in *Journal of African History* 22(1981): 1-22; Jack Harlan, J. De Wet, and A. Stemler, *Origins of African Plant Domestication* (Chicago: Aldine, 1976); R. Charbolin, "Rice in West Africa," in *Food Crops of the Lowland Tropics*, eds. C. L. A. Leakey and J. B. Wills (Oxford: Oxford University Press, 1977), 7-25.

8. Portères, "Primary Cradles of Agriculture"; Harlan, et al, *Origins of African Plant Domestication*.

9. Charles Kovacik and John Winberry, *South Carolina. The Making of a Landscape* (Boulder, CO: Westview, 1987); Timothy Silver, *A New Face on the Countryside* (Cambridge and New York: Cambridge University Press, 1990).

10. F. R. Moorman and N. Van Breeman, *Rice: Soil, Water, Land* (Los Banos, Philippines: International Rice Research Institute, 1978); West African Rice Development Association, "Types of Rice Cultivation in West Africa," in *Occasional Paper No. 2* (1980), Monrovia, Liberia.

11. Paul Richards, *Coping with Hunger* (London: Allen and Unwin, 1986); W. Andriesse and L. O. Fresco, "A Characterization of Rice-Growing Environments in West Africa," in *Agriculture, Ecosystems and Environment* 33(1991): 377-395.

12. Littlefield, *Rice and Slaves*; Joyce Chaplin, *Anxious Pursuit. Agricultural Innovation and Modernity in the Lower South, 1730-1815* (Chapel Hill: University of North Carolina Press, 1993).

13. Littlefield, *Rice and Slaves*.

14. Olga Linares, "From Tidal Swamp to Inland Valley: On the Social Organization of Wet Rice Cultivation among the Diola of Senegal," in *Africa* 5(1981): 557-594; idem, *Power, Prayer and Production* (Cambridge and New York: Cambridge University Press, 1992).

15. The West African tidal rice yields are about the same as that recorded in South Carolina and Georgia during the ante-bellum period: about 1.7-2.2 tons per hectare. Doar, *Rice and Rice Planting*, 18.

16. H. A. R. Gibb, *Ibn Battuta. Travels in Asia and Africa 1325-1354* (London: Routledge & Kegan Paul,

1969); Graham Connah, *African Civilizations: Precolonial Cities and States in Tropical Africa – An Archaeological Perspective* (Cambridge and New York: Cambridge University Press, 1987).

17. Tadeusz Lewicki, *West African Food in the Middle Ages* (Cambridge and New York: Cambridge University Press, 1974).

18. Gomes Ennes de Azurara, *The Chronicle of the Discovery and Conquest of Guinea*, Vol. II (London: Hakluyt, 1899); G. R. Crone, *The Voyages of Cadamosto* (London: Hakluyt, 1937); Paul Pélissier, *Les Paysans du Sénégal: Les Civilisations Agraires du Cayor a la Casamance* (St. Yrieix: Imprimerie Fabreque, 1966); A. Donelha, *An Account of Sierra Leone and the Rivers of Guinea and Cape Verde* (Lisbon: Junta de Investigações Científicas, 1977).

19. The Gomes observation appears in Th. Monod, R. Mauny, and G. Duval, "De la Première Découverte de la Guinée," in *Récit par Diogo Gomes (Fin XV siècle)*. (Bissau, Guinea-Bissau: Centro de Estudos da Guiné Portuguesa, 1959), 42, 66. On the arid conditions over the period c. 1100 to c. 1500 in West Africa, see George Brooks, *Landlords and Strangers: Ecology, Society, and Trade in Western Africa, 1000-1630*. (Boulder, CO: Westview Press, 1993), 7.

20. Valentim Fernandes, *Description de la Côte Accidentale d'Afrique* (Bissau: Centro de Estudos de Guiné Portuguesa 1951; Pélissier, *Les Paysans du Sénégal*; Walter Rodney, *A History of the Upper Guinea Coast, 1545-1800* (New York: Monthly Review Press, 1970).

21. Note at the bottom of Figure 6 the drawing of an individual using the kayendo shovel for field preparation. This is still the principal implement utilized in mangrove rice cultivation.

22. Dapper noted: "Those who are hard-working can cultivate three rice-fields in one summer: they sow the first rice on low ground, the second a little higher and the third...on the high ground, each a month after the previous one, in order not to have all the rice ripe at the same time. This is the commonest [sic] practice throughout the country...The first or early rice, sown in low and damp areas...the second, sown on somewhat higher ground...the third, sown on the high ground...." Excerpt drawn from Paul Richards, "Culture & Community Values in the Selection & Maintenance of African Rice," in *Indigenous People and Intellectual Property Rights*, B. L. Turner and S. Brush, eds. (Washington, D.C.: Island Press, 1996), 213, based on a translation from the Dutch of Olfert Dapper's manuscript, *New Description of Africa*.

23. M. Adanson, *A Voyage to Senegal, the Isle of Goree and the River Gambia* (London: Nourse, 1759); Francis Moore, *Travels into the Inland Parts of Africa* (London: Edward Cave, 1738); G. Mollien, *Travels in Africa* (London: Sir Richard Phillips & Co., 1820); Mungo Park, *Travels into the Interior of Africa* (London: Eland, 1954[1799]); Pélissier, *Les Paysans du Sénégal*.

24. Rodney, *History of the Upper Guinea Coast*; Thomas Winterbottom, *An Account of the Native Africans in the Neighbourhood of Sierra Leone* (London: C. Whittingham, 1803); Rene Caillié, *Travels through Central Africa to Timbuctoo, and across the Great Desert*,

to Morocco, Performed in the Years 1824-1828 (London: Colburn & Bentley, 1830).

25. Caillié, *Travels through Central Africa*, 162.

26. Wood, *Black Majority*, 25-26, 143.

27. Ibid, 25, 57-58.

28. James Clifton, "The Rice Industry in Colonial America," in *Agricultural History* 55(1981): 266-283.

29. Wood, *Black Majority*, 26; Converse Clowse, *Economic Beginnings in Colonial South Carolina* (Columbia: University of South Carolina Press, 1981), 57-58; Clifton, "The Rice Industry in Colonial America," 274.

30. Doar, *Rice and Rice Planting*; Kovacic and Winberry, *South Carolina. The Making of a Landscape*; Judith Carney and Richard Porcher, "Geographies of the Past: Rice, Slaves and Technological Transfer in South Carolina," in *Southeastern Geographer* 33(1993): 127-147; Judith Carney, *Black Rice: The African Origins of Rice Cultivation in the Americas*. Cambridge, MA: Harvard University Press, Spring 2001.

31. John S. Otto, *The Southern Frontiers, 1607-1860* (New York: Greenwood, 1989); Wood, *Black Majority*, 162.

32. Wood, *Black Majority*, 55.

33. Thomas Nairne, "A Letter from South Carolina," in *Selling a New World: Two Colonial South Carolina Promotional Pamphlets*, ed. Jack Greene (Columbia: University of South Carolina Press, 1989[1710]), 33-73; Clifton, *Life and Labor on Argyle Island*; Clarence Ver Steeg, *Origins of a Southern Mosaic* (Athens: University of Georgia Press, 1984).

34. Clifton, "The Rice Industry," 275.

35. Hawley, "The Old Plantations."

36. John B. Irving, *A Day on the Cooper River* (Charleston, SC: R. K. Bryan Co., 1969), 154.

37. Heyward, *Seeds from Madagascar*; Sam B. Hilliard, "Antebellum Tidewater Rice Culture in South Carolina and Georgia," in *European Settlement and Development in North America: Essays on Geographical Change in Honour and Memory to Andrew Hill Clark*, ed. James Gibson (Toronto: University of Toronto, 1978), 91-115; Richard Porcher, "Rice Culture in South Carolina: A Brief History, The Role of the Huguenots, and Preservation of Its Legacy," in *Transactions of the Huguenot Society of South Carolina* 92(1987): 11-22; David Whitten, "American Rice cultivation, 1680-1980: A Tercentenary Critique," in *Southern Studies* 21(1982): 5-26.

38. Heyward, *Seeds from Madagascar*; also, Hilliard, "Antebellum Tidewater Culture," 99, makes the point that during much of the eighteenth century both inland swamp fields with reservoirs and tidewater rice existed simultaneously and that freshwater reservoirs were common even on plantations situated within or near the tidal zone: "In many cases there must have been a blending of the two types of irrigation, for Solon Robinson observed a tidewater planter on the Cooper River who had '...ponds of fresh water covering 100 acres of upland, which are held in reserve to water the rice fields when the river is too salt'."

39. Wilms, "The Development of Rice Culture," 49.

40. "Advertisement for Tidal Land Sale," January 19, 1738, *South Carolina Gazette* (Charleston: South Carolina Historical Society, n. d.); Clifton, "The Rice Industry," 275-276.
 41. Wilms, "The Development of Rice Culture," 49.
 42. Clifton, "The Rice Industry," 276.
 43. Hilliard, "Antebellum Tidewater Rice Culture," 100.
 44. John Drayton, *A View of South Carolina, as Respects her Natural and Civil Concerns* (Spartanburg, SC: The Reprint Co., 1970[1802]), 36; Chaplin, *An Anxious Pursuit*, 231.
 45. Hilliard, "Antebellum Tidewater Rice Culture."
 46. Otto, *The Southern Frontiers, 1607-1860*, 41.
 47. Leland Ferguson, *Uncommon Ground. Archaeology and Early African America, 1650-1800* (Washington, D.C.: Smithsonian Institution, 1992), xxiv-xxv, footnote 3, 147.
 48. Lewis Gray, *History of Agriculture in the Southern U. S. to 1860*, 2 vols. (Gloucester, MA: Peter Smith, 1958), 281.
 49. R. F. W. Allston, "Essay on Sea Coast Crops." In *De Bow's Review* 16(1854); John Glen, "A Description of South Carolina: Containing Many Curious and Interesting Particulars Relating to the Civil, Natural and Commercial History of That Colony," in *Colonial South Carolina: Two Contemporary Descriptions*, ed. Chapman J. Milling (Columbia: University of South Carolina Press, 1951[1761]), 15; Clifton, "The Rice Industry in Colonial America," 275; Whitten, "American Rice Cultivation," 9-15.
 50. House, *Planter Management*, 25.
 51. Doar, *Rice and Rice Planting*, 12.
 52. Dale Rosengarten, "Social Origins of the African-American Lowcountry Basket" (Ph.D. dissertation, Harvard University, 1997).
- ### Bibliography
- Adanson, M. *A Voyage to Senegal, The Isle of Goree and the River Gambia*. London: Nourse, 1759.
- Allston, R. F. W. "Essay on Sea Coast Crops." In *De Bow's Review* 16(1854): 589-615.
- Andriesse, W., and L.O. Fresco. "A characterization of rice-growing environments in West Africa." In *Agriculture, Ecosystems and Environment* 33(1991): 377-395.
- Azurara, Gomes Eannes de. *The Chronicle of the Discovery and Conquest of Guinea*, Vol.II. London: Hakluyt, 1899.
- Bray, Francesca. "Patterns of Evolution in Rice Growing Societies." In *Journal of Peasant Societies* 11(1983): 3-33.
- Caillié, Rene. *Travels through Central Africa to Timbuctoo, and across the Great Desert, to Morocco, performed in the Years 1824-1828*. London: Colburn & Bentley, 1830.
- Carney, Judith. "From Hands to Tutors: African Expertise in the South Carolina Rice Economy." In *Agricultural History* 67(1993): 1-30.
- . *Black Rice: The African Origins of Rice Cultivation in the Americas*. Cambridge, MA: Harvard University Press, 2001.
- Carney, Judith, and Richard Porcher. "Geographies of the Past: Rice, Slaves and Technological Transfer in South Carolina." In *Southeastern Geographer* 33(1993): 127-47.
- Chaplin, Joyce. *An Anxious Pursuit. Agricultural Innovation and Modernity in the Lower South, 1730-1815*. Chapel Hill: University of North Carolina Press, 1993.
- Charbolin, R. "Rice in West Africa." In *Food Crops of the Lowland Tropics*, eds. C. L. A. Leakey and J. B. Wills, 7-25. Oxford: Oxford University Press, 1977.
- Clifton, James. "Golden Grains of White: Rice Planting on the Lower Cape Fear." In *The North Carolina Historical Review* 50(1973): 365-393.
- . *Life and Labor on Argyle Island*. Savannah, SC: Beehive Press, 1978.
- . "The Rice Industry in Colonial America." In *Agricultural History* 55(1981): 266-283.
- Clowse, Converse. *Economic Beginnings in Colonial South Carolina*. Columbia: University of South Carolina, 1981.
- Coclanis, Peter. *The Shadow of a Dream*. New York: Oxford University, 1989.
- Connah, Graham. *African Civilizations: Precolonial Cities and States in Tropical Africa – An Archaeological Perspective*. Cambridge and New York: Cambridge University Press, 1987.
- Crone, G. R. *The Voyages of Cadamosto*. London: Hakluyt, 1937.
- Doar, David. *Rice and Rice Planting in the South Carolina Low Country*. Charleston, SC: Charleston Museum, 1970[1936].

Places of Cultural Memory: African Reflections on the American Landscape

- Donelha, A. *An Account of Sierra Leone and the Rivers of Guinea and Cape Verde*. Lisbon: Junta de Investigacoes Cientificas, 1977.
- Drayton, John. *A View of South Carolina, as Respects her Natural and Civil Concerns*. Spartanburg, SC: The Reprint Co., 1970[1802].
- Ferguson, Leland. *Uncommon Ground. Archaeology and Early African America, 1650-1800*. Washington D.C.: Smithsonian Institution, 1992.
- Fernandes, Valentim. *Description de la Côte Accidentale d'Afrique*. Bissau: Centro de Estudos de Guiné Portuguesa, 1951.
- Flanders, Ralph Betts. *Plantation Slavery in Georgia*. Chapel Hill: University of North Carolina Press, 1933.
- Gibb, H. A. R. *Ibn Battuta. Travels in Asia and Africa 1325-1354*. London: Routledge & Kegan Paul, 1969.
- Glen, John. "A Description of South Carolina: Containing Many Curious and Interesting Particulars Relating to the Civil, Natural and Commercial History of That Colony." In *Colonial South Carolina: Two Contemporary Descriptions*, ed. Chapman J. Milling. Columbia: University of South Carolina Press, 1951[1761].
- Gray, Lewis. *History of Agriculture in the Southern U.S. to 1860*, 2 Vols. Gloucester, MA: Peter Smith, 1958.
- Gresham, Charles A. and Donal D. Hook. "Rice Fields of South Carolina: A Resource Inventory and Management Policy Evaluation." In *Coastal Zone Management Journal* 9(1982): 183-203.
- Harlan, Jack, J. De Wet, and A. Stemler. *Origins of African Plant Domestication*. Chicago: Aldine, 1976.
- Hawley, Norman. "The Old Plantations in and Around the Santee Experimental Forest." In *Agricultural History* 23(1949): 86-91.
- Heyward, Duncan. *Seed from Madagascar*. Chapel Hill: University of North Carolina Press, 1937.
- Hilliard, Sam B. "Antebellum Tidewater Rice Culture in South Carolina and Georgia." In *European Settlement and Development in North America: Essays on Geographical Change in Honour and Memory of Andrew Hill Clark*, ed. James Gibson, 91-115. Toronto: University of Toronto, 1978.
- House, Albert Virgil. *Planter Management and Capitalism in Antebellum Georgia*. New York: Columbia University Press, 1954.
- Irving, John B. *A Day on the Cooper River*. Charleston, SC: R.K. Bryan Co., 1969.
- Kovacik, Charles and John Winberry. *South Carolina. The Making of a Landscape*. Boulder, CO: Westview, 1987.
- Lewicki, Tadeusz. *West African Food in the Middle Ages*. Cambridge and New York: Cambridge University Press, 1974.
- Linares, Olga. "From Tidal Swamp to Inland Valley: On the Social Organization of Wet Rice Cultivation among the Diola of Senegal." *Africa* 5(1981): 557-594.
- . *Power, Prayer and Production*. Cambridge and New York: Cambridge University Press, 1992.
- Littlefield, Daniel. *Rice and Slaves*. Baton Rouge: Louisiana State University Press, 1981.
- McIntosh, R. J. and S. K. "The Inland Niger Delta before the Empire of Mali: Evidence from Jenne-jeno," *Journal of African History* 22(1981): 1-22.
- Mollien, G. *Travels in Africa*. London: Sir Richard Phillips & Co., 1820.
- Monod, Th., R. Mauny, and G. Duval 1959. *De la Première Découverte de la Guinée. Récit par Diogo Gomes (Fin XV siècle)*. Bissau, Guinea-Bissau: Centro de Estudos da Guiné Portuguesa.
- Moore, Francis. *Travels into the Inland Parts of Africa*. London: Edward Cave, 1738.
- Moorman, F. R., and W. J. Veldkamp. "Land and Rice in Africa: Constraints and Potentials." In *Rice in Africa*, eds. I. Buddenhagen and J. Persely, 29-43. London: Academic Press, 1978.
- Moorman, F. R., and N. Van Breeman. *Rice: Soil, Water, Land*. Los Banos, Philippines: International Rice Research Institute, 1978.
- Morgan, Pat. "A Study of Tide Lands and Impoundments within a Three River Delta System—The South Edisto, Ashepoo, and Cumber Rivers of South Carolina." Masters thesis, University of Georgia, 1974.
- Nairne, Thomas. "A Letter from South Carolina." In *Selling a New World: Two Colonial South Carolina Promotional Pamphlets*, ed. Jack Greene, 33-73. Columbia: University of South Carolina, 1989[1710].

- Otto, John S. *The Southern Frontiers, 1607-1860*. New York: Greenwood, 1989.
- Park, Mungo. *Travels into the Interior of Africa*. London: Eland, 1954[1799].
- Pélissier, Paul. *Les Paysans du Sénégal: Les Civilisations Agraires du Cayor a la Casamance*. St. Yrieix: Imprimerie Fabreque, 1966.
- Phillips, Ulrich B. *American Negro Slavery*. New York: D. Appleton and Co., 1918.
- Porcher, Richard. *A Field Guide to the Bluff Plantation*. New Orleans, LA: O'Brien Foundation, 1985.
- . "Rice Culture in South Carolina: A Brief History, The Role of the Huguenots, and Preservation of Its Legacy." In *Transactions of the Huguenot Society of South Carolina* 92(1987): 11-22.
- Portères, Roland. "Primary Cradles of Agriculture in the African Continent." In *Papers in African Prehistory*, J. D. Fage and R. A. Oliver, eds., 43-58. Cambridge and New York: Cambridge University Press, 1970.
- Richards, Paul. *Coping with Hunger*. London: Allen and Unwin, 1986.
- . "Upland and Swamp Rice Farming Systems in Sierra Leone: An Evolutionary Transition?" In *Comparative Farming Systems*, eds. B. L. Turner and S. Brush. New York: Guilford, 1987.
- . "Culture & Community Values in the Selection & Maintenance of African Rice." In *Indigenous People and Intellectual Property Rights*, B. L. Turner and S. Brush, eds., 209-229. Washington, D.C.: Island Press, 1996.
- Rodney, Walter. *A History of The Upper Guinea Coast, 1545-1800*. New York: Monthly Review Press, 1970.
- Rosengarten, Dale. "Social Origins of the African-American Lowcountry Basket." Ph.D. dissertation, Harvard University, 1997.
- Salley, A. S. "The Introduction of Rice Culture into South Carolina." In *Bulletin of the Historical Commission of South Carolina* 6. Columbia, S.C.: State Company, 1919.
- Silver, Timothy. *A New Face on the Countryside*. Cambridge and New York: Cambridge University Press, 1990.
- Smith, Julia Floyd. *Slavery and Plantation Growth in Antebellum Florida 1821-1860*. Gainesville: University of Florida Press, 1973.
- . *Slavery and Rice Culture in Low Country Georgia 1750-1860*. Knoxville: University of Tennessee Press, 1985.
- "Advertisement for Tidal Land Sale." *South Carolina Gazette*, 19 January, 1738. Charleston: South Carolina Historical Society, n. d.
- United States Census Office. *Agriculture of the U.S. 1860. 8th Census*. Washington D.C.: Government Printing Office, 1864.
- Ver Steeg, Clarence. *Origins of a Southern Mosaic*. Athens: University of Georgia Press, 1984.
- West African Rice Development Association (WARDA). "Types of Rice Cultivation in West Africa." In *Occasional Paper No. 2*(1980). Monrovia, Liberia.
- Whitten, David. "American Rice Cultivation, 1680-1980: A Tercentenary Critique." In *Southern Studies* 21(1982): 5-26.
- Wilms, Douglas C. "The Development of Rice Culture in 18th Century Georgia." In *Southeastern Geographer* 12(1972): 45-57.
- Winterbottom, Thomas. *An Account of the Native Africans in the Neighbourhood of Sierra Leone*. London: C. Whittingham, 1803.
- Wood, Peter H. *Black Majority*. New York: Norton, 1974.
- Wood, Betty. *Slavery in Colonial Georgia*. Athens: University of Georgia Press, 1984.

**Places of Cultural Memory:
African Reflections on the American Landscape**